Service Schematics

NOKIA N93

RM-55

Introduction

IMPORTANT:

This document is intended for use by authorized NOKIA service centers only.



"Service Schematics" was created with focus on customer care.
The purpose of this document is to provide further technical repair information for NOKIA mobile phones on Level 3/4 service activities.
It contains additional information such as e.g. "Component finder".
The "Signal overview" page gives a good and fast overview about the most important signals and voltages on board.
Saving process time and improving the repair quality is the aim of this document.
It is to be used additionally to the service manual and other training or service information such as Service Bulletins.

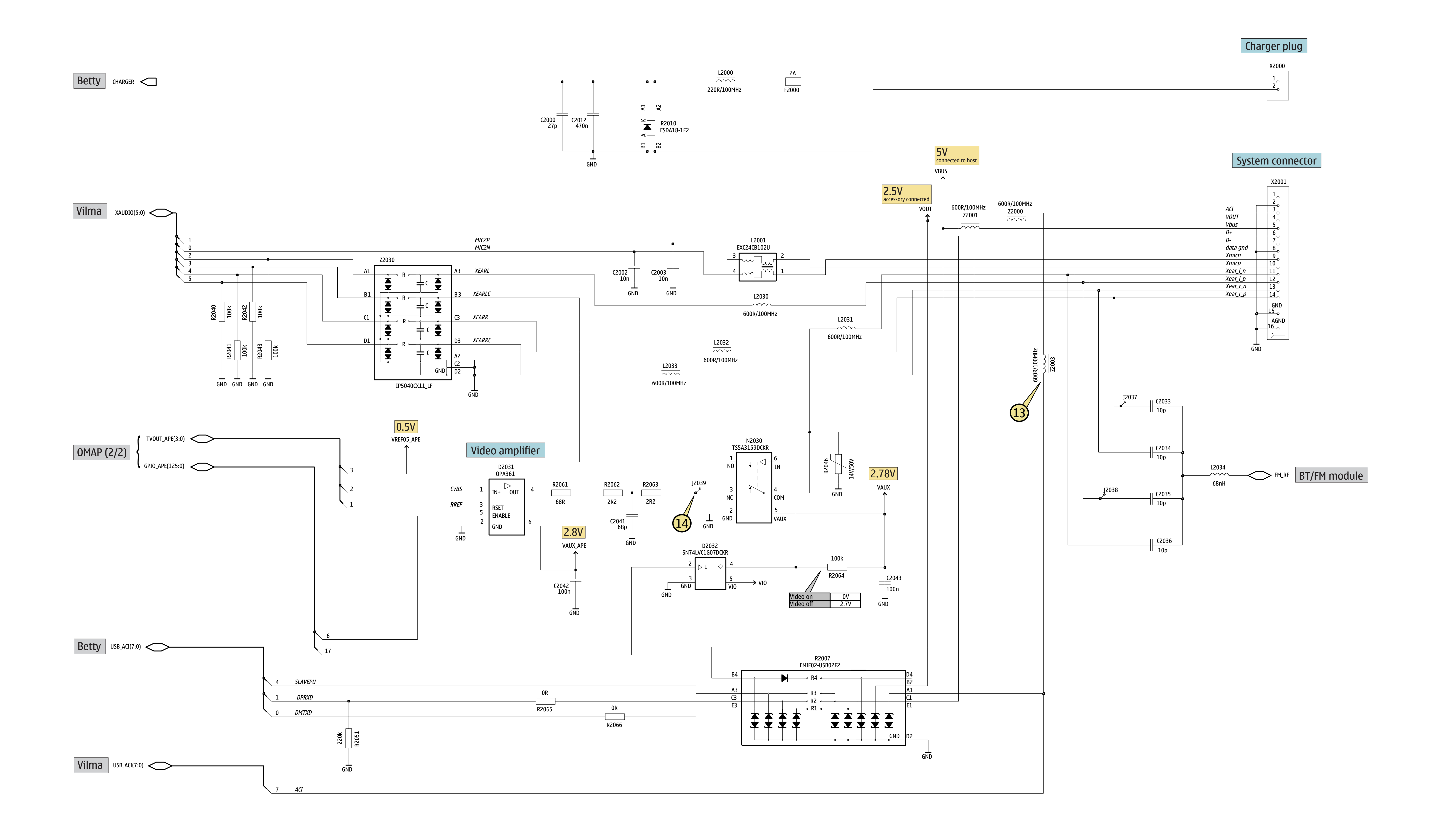
All measurements were made using following equipment:

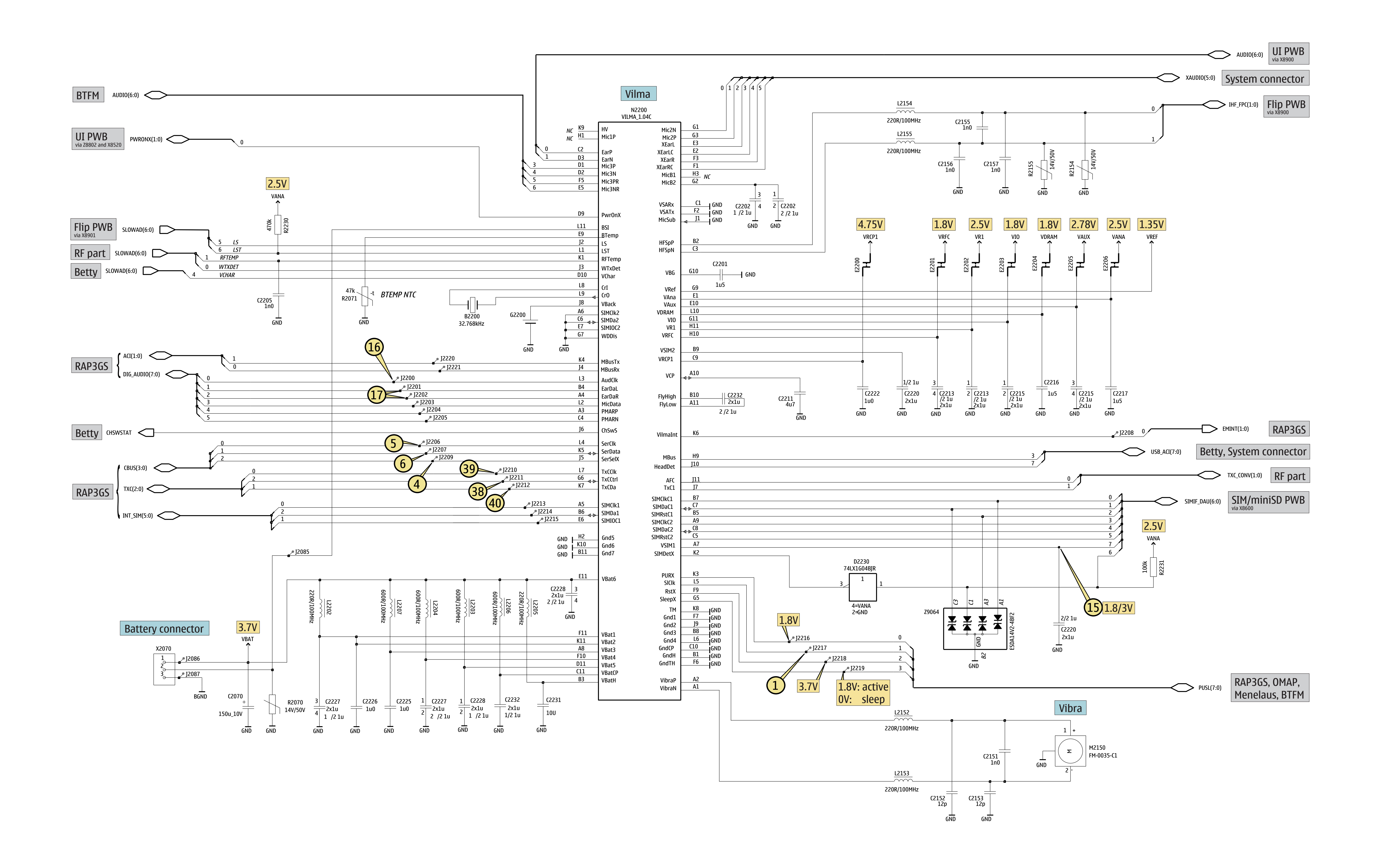
Nokia repair SW	: Phoenix version 2006.12.5.136
Oscilloscope	: Fluke PM 3380A/B
Spectrum Analyzer	: Advantest R3162 with an analog probe
RF-Generator / GSM Tester	: Rhode & Schwarz CMU 200
Multimeter	: Fluke 73 Series II

While every endeavour has been made to ensure the accuracy of this document, some errors may exist. If the reader finds any errors, NOKIA shall be notified in writing.

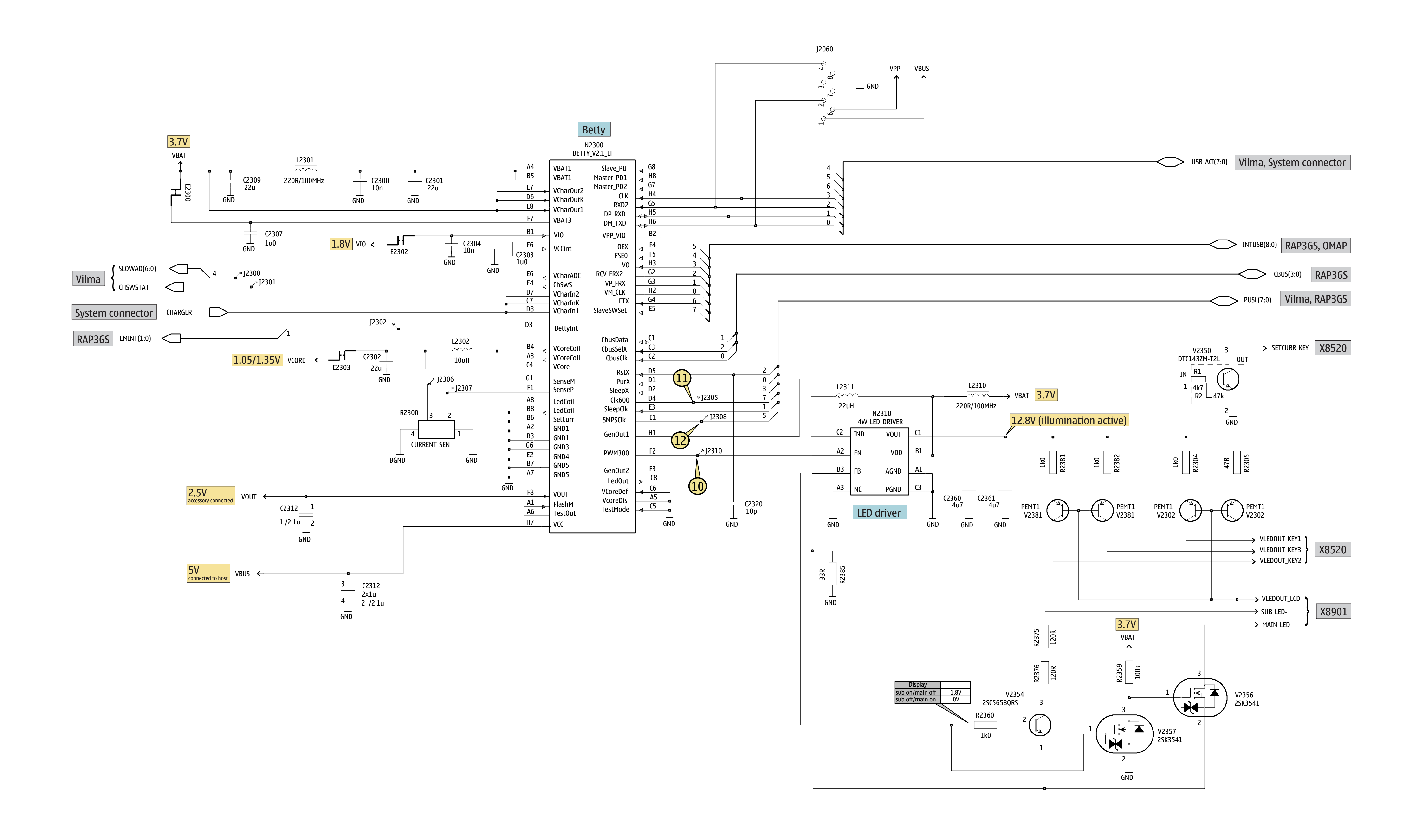
Please send E-Mail to: training.sace@nokia.com

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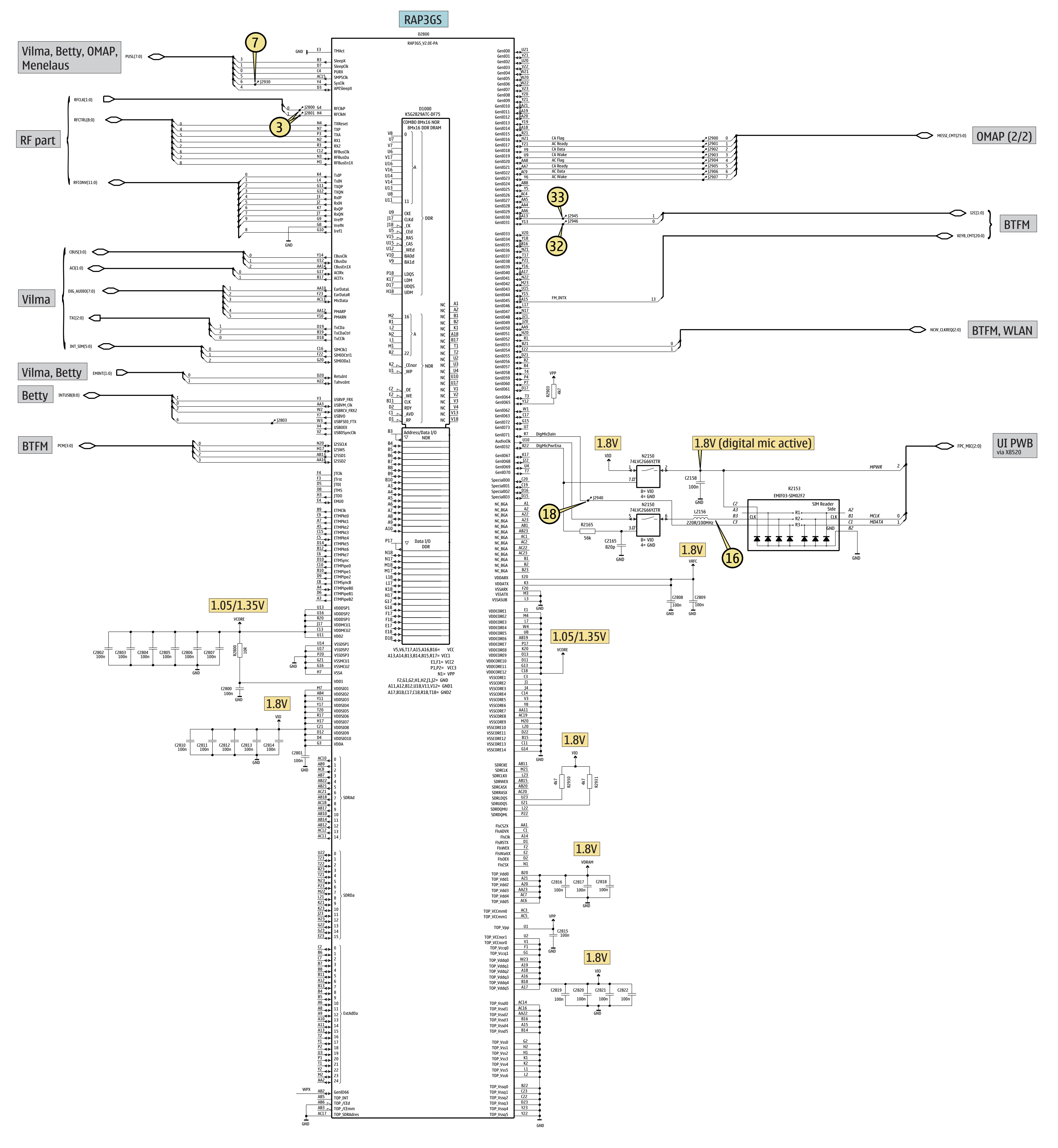

Charger plug
System connector
Betty
CHARGER
Vilma
XAUDIO(5:0)
OMAP (2/2)
TVOUT_APE(3:0)
GPIO_APE(125:0)
Betty
USB_ACI(7:0)
Vilma
USB_ACI(7:0)
Video amplifier
BT/FM module
FM_RF
5V
connected to host
VBUS
2.5V
accessory connected
VOUT
0.5V
VREF05_APE
2.8V
VAUX_APE
2.78V
VAUX
X2000
X2001
L2000
220R/100MHz
F2000
2A
R2010
ESDA18-1F2
C2000
27p
C2012
470n
Z2030
IP5040CX11_LF
L2001
EXC24CB102U
D2031
OPA361
N2030
TS5A3159DCKR
D2032
SN74LVC1G07DCKR
R2007
EMIF02-USB02F2
MIC2P
MIC2N
XEARL
XEARLC
XEARR
XEARRC
CVBS
RREF
SLAVEPU
DPRXD
DMTXD
ACI
VOUT
Vbus
D+
D-
data gnd
Xmicn
Xmicp
Xear_l_n
Xear_l_p
Xear_r_n
Xear_r_p
GND
AGND
L2034
68nH
R2064
100k
C2043
100n
R2046
14V/50V
Video on 0V
Video off 2.7V
13
14

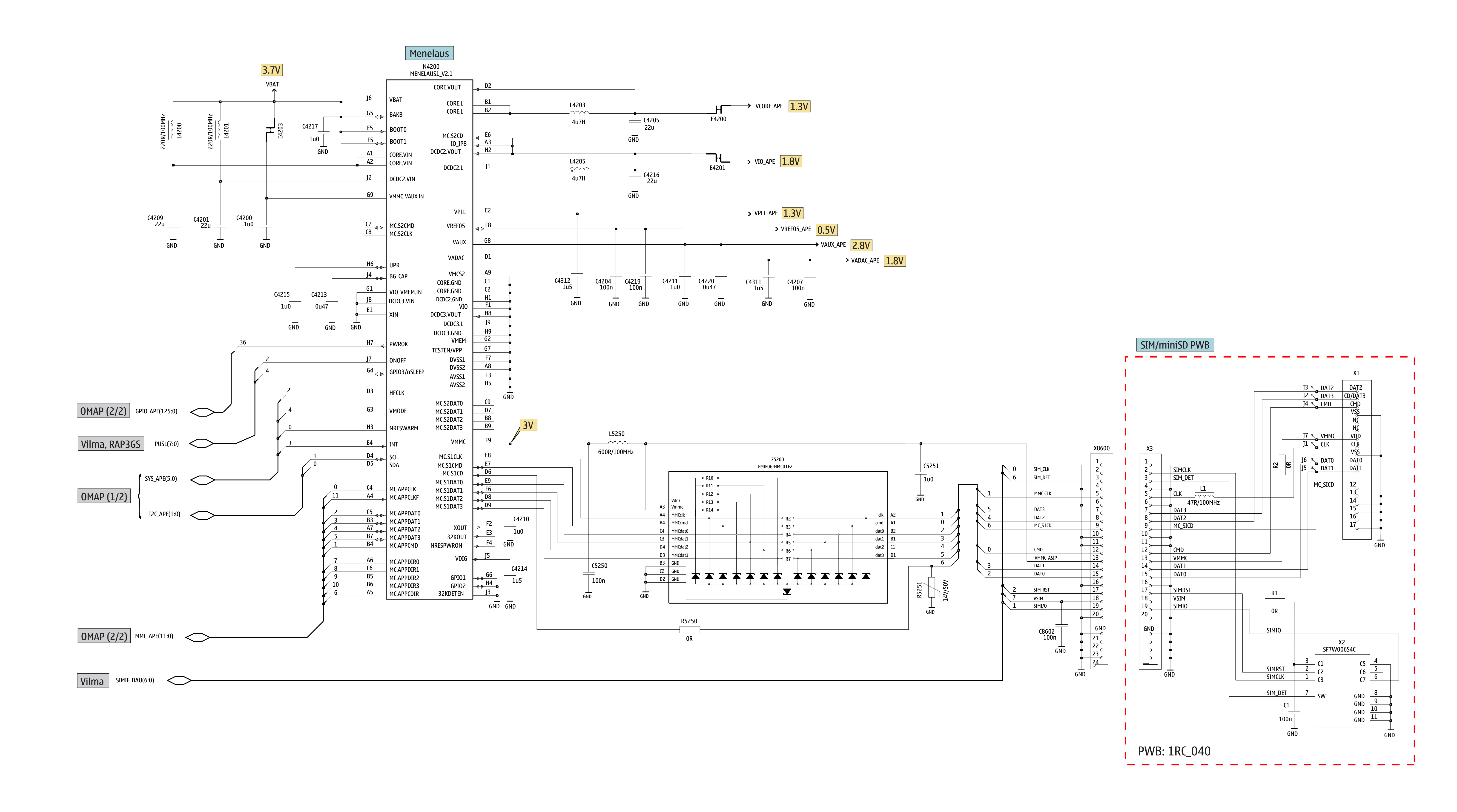


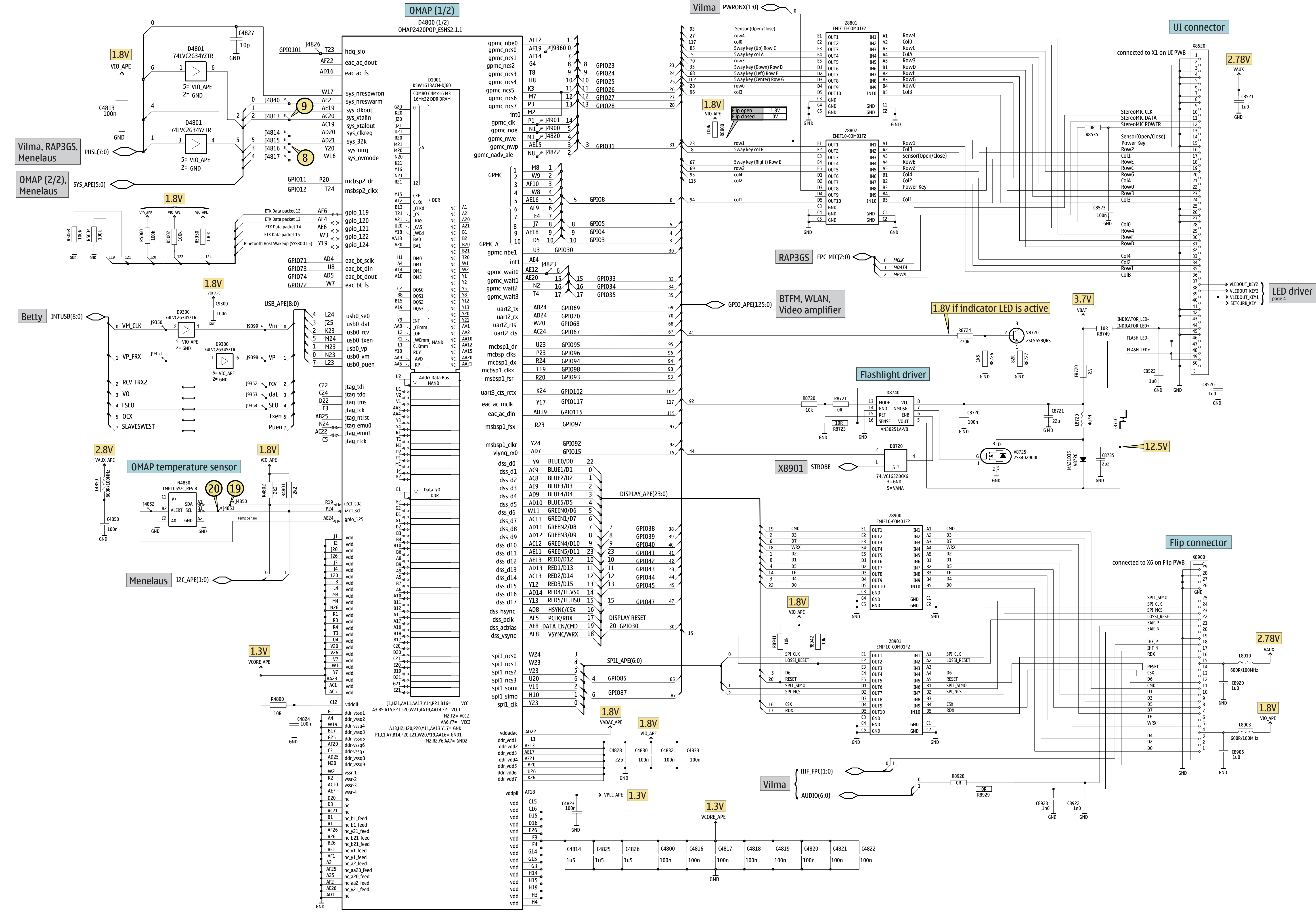
Vilma
N2200
VILMA_1.04C
BTFM
UI PWB
via Z8802 and X8520
Flip PWB
via X8901
RF part
Betty
RAP3GS
Battery connector
UI PWB
via X8900
System connector
Flip PWB
via X8900
RAP3GS
Betty, System connector
RF part
SIM/miniSD PWB
via X8600
RAP3GS, OMAP, Menelaus, BTFM
Vibra
AUDIO(6:0)
PWRONX(1:0)
SLOWAD(6:0)
ACI(1:0)
DIG_AUDIO(7:0)
CHSWSTAT
CBUS(3:0)
TXC(2:0)
INT_SIM(5:0)
XAUDIO(5:0)
IHF_FPC(1:0)
EMINT(1:0)
USB_ACI(7:0)
TXC_CONV(1:0)
SIMIF_DAU(6:0)
PUSL(7:0)
2.5V
3.7V
4.75V
1.8V
2.78V
1.35V
1.8/3V
1.8V: active
0V: sleep
BTEMP NTC
B2200
32.768kHz
D2230
74LX1G04BJR
Z9064
ESDA14V2-4BF2
M2150
FM-0035-C1
X2070



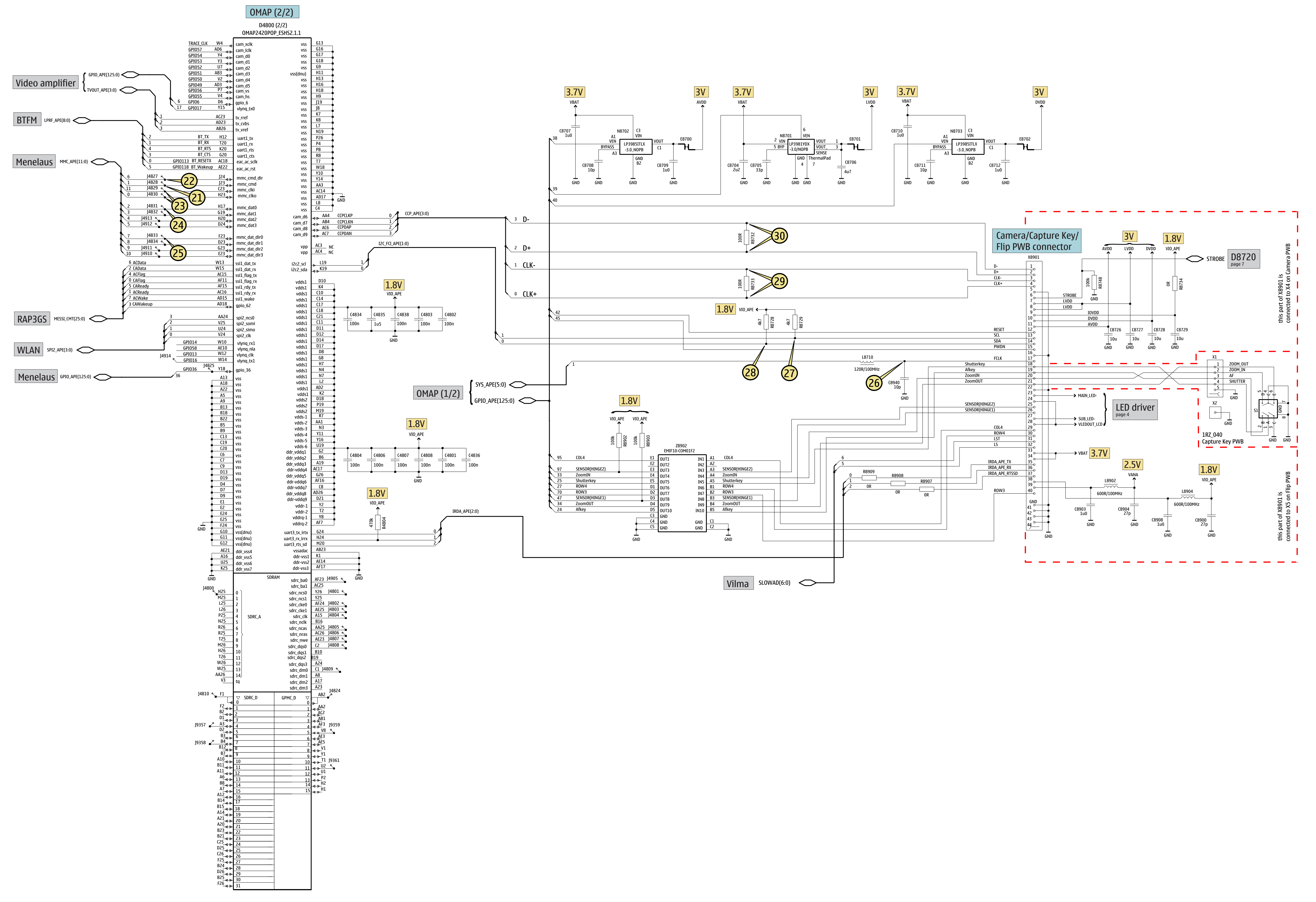
Betty
N2300
BETTY_V2.1_LF
3.7V
VBAT
E2300
L2301
220R/100MHz
C2309 22u
C2300 10n
C2301 22u
C2307 1u0
1.8V
VIO
E2302
C2304 10n
C2303 1u0
Vilma
SLOWAD(6:0)
CHSWSTAT
J2300
J2301
System connector
CHARGER
J2302
RAP3GS
EMINT(1:0)
1.05/1.35V
VCORE
E2303
C2302 22u
L2302 10uH
J2306
J2307
R2300
CURRENT_SEN
BGND
GND
2.5V
accessory connected
VOUT
C2312 1 /2 1u
5V
connected to host
VBUS
C2312 2x1u 2 /2 1u
VBAT1
VCharOut2
VCharOutK
VCharOut1
VBAT3
VIO
VCCint
VCharADC
ChSwS
VCharIn2
VCharInK
VCharIn1
BettyInt
VCoreCoil
VCore
SenseM
SenseP
LedCoil
SetCurr
GND1
GND3
GND4
GND5
FlashM
TestOut
VCC
Slave_PU
Master_PD1
Master_PD2
CLK
RXD2
DP_RXD
DM_TXD
VPP_VIO
OEX
FSE0
VO
RCV_FRX2
VP_FRX
VM_CLK
FTX
SlaveSWSet
CbusData
CbusSelX
CbusClk
RstX
PurX
SleepX
Clk600
SleepClk
SMPSClk
GenOut1
PWM300
GenOut2
LedOut
VCoreDef
VcoreDis
TestMode
J2060
VPP
VBUS
USB_ACI(7:0)
Vilma, System connector
INTUSB(8:0)
RAP3GS, OMAP
CBUS(3:0)
RAP3GS
PUSL(7:0)
Vilma, RAP3GS
J2305
J2308
J2310
11
12
10
C2320 10p
L2311 22uH
L2310 220R/100MHz
VBAT 3.7V
N2310
4W_LED_DRIVER
IND
VOUT
EN
VDD
FB
AGND
NC
PGND
LED driver
C2360 4u7
C2361 4u7
12.8V (illumination active)
V2350
DTC143ZM-T2L
SETCURR_KEY
X8520
IN
OUT
R1 4k7
R2 47k
1k0 R2381
1k0 R2382
1k0 R2304
47R R2305
PEMT1 V2381
PEMT1 V2302
VLEDOUT_KEY1
VLEDOUT_KEY3
VLEDOUT_KEY2
VLEDOUT_LCD
SUB_LED-
MAIN_LED-
X8901
33R R2385
R2375 120R
R2376 120R
R2359 100k
V2354
2SC5658QRS
R2360 1k0
V2357
2SK3541
V2356
2SK3541
Display
sub on/main off 1.8V
sub off/main on 0V

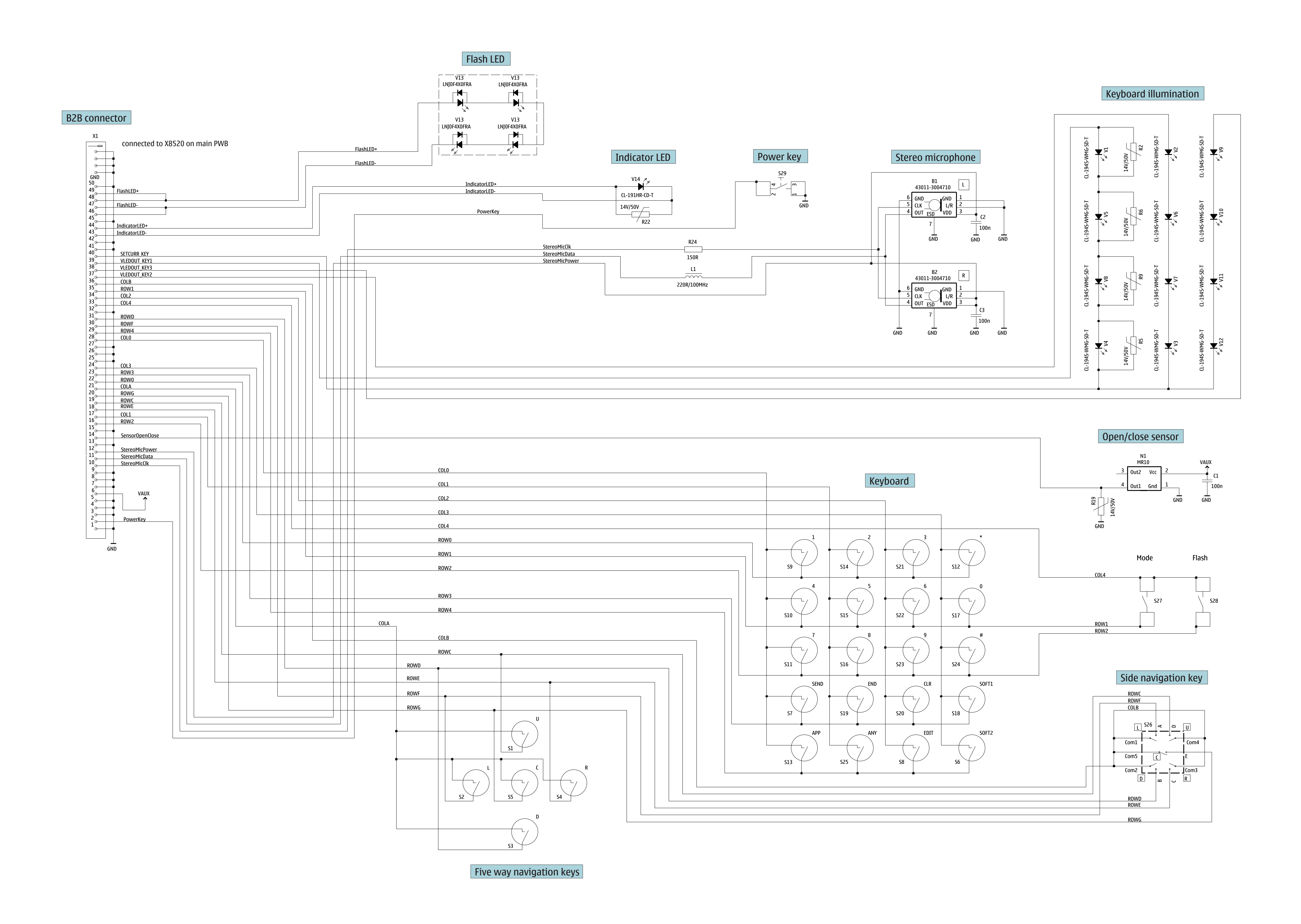

RAP3GS
Vilma, Betty, OMAP, Menelaus
RF part
Vilma
Vilma, Betty
Betty
BTFM
OMAP (2/2)
BTFM
BTFM, WLAN
UI PWB
via X8520
1.8V
1.8V (digital mic active)
1.8V
1.05/1.35V
1.05/1.35V
1.8V
1.8V
1.8V
1.8V
7
3
33
32
18
16

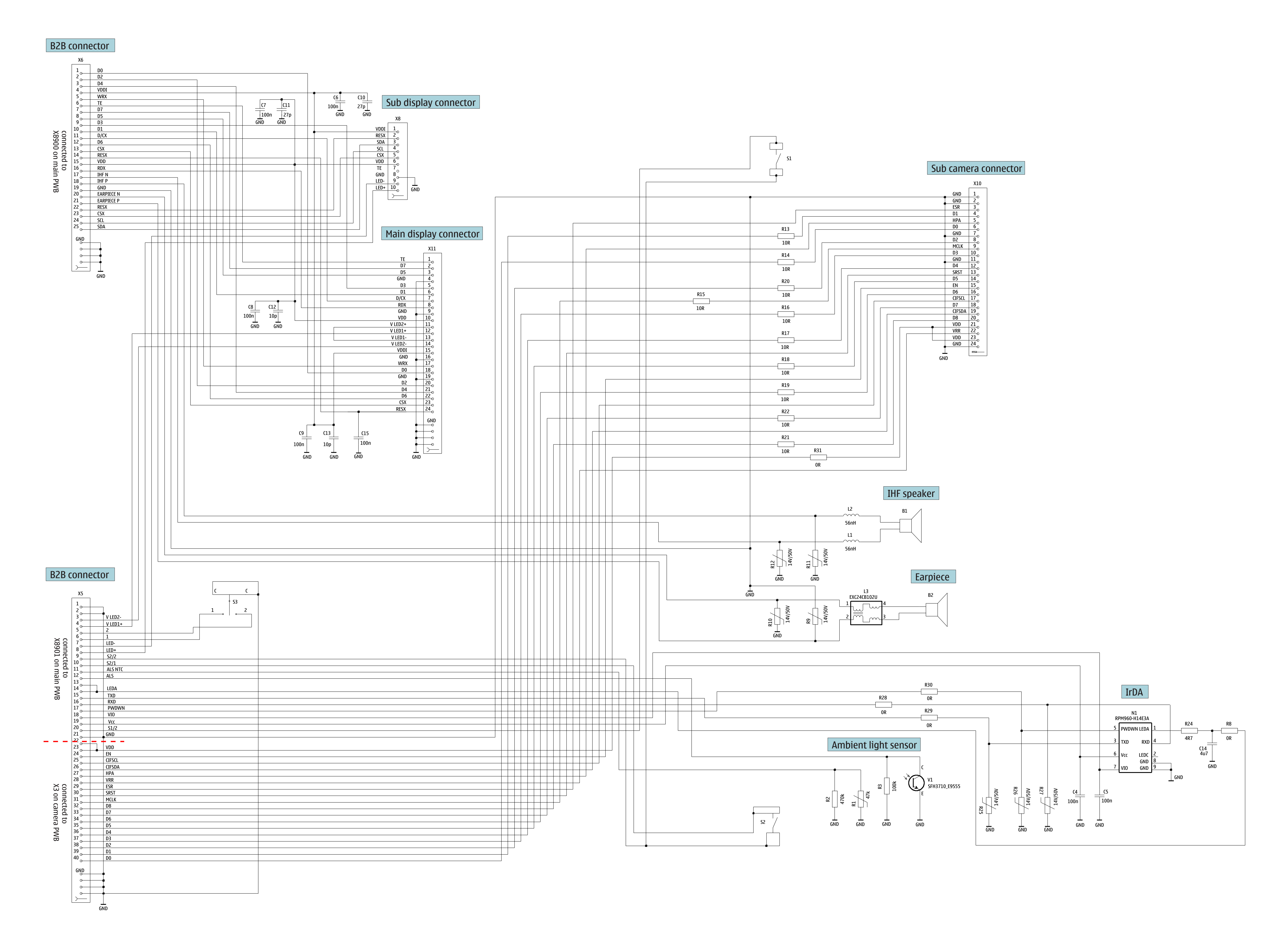

Menelaus
N4200
MENELAUS1_V2.1
3.7V
VBAT
VCORE_APE 1.3V
VIO_APE 1.8V
VPLL_APE 1.3V
VREF05_APE 0.5V
VAUX_APE 2.8V
VADAC_APE 1.8V
3V
OMAP (2/2)
GPIO_APE(125:0)
Vilma, RAP3GS
PUSL(7:0)
OMAP (1/2)
SYS_APE(5:0)
I2C_APE(1:0)
OMAP (2/2)
MMC_APE(11:0)
Vilma
SIMIF_DAU(6:0)
SIM/miniSD PWB
PWB: 1RC_040
Z5200
EMIF06-HMC01F2
X8600
X3
X1
X2
SF7W006S4C



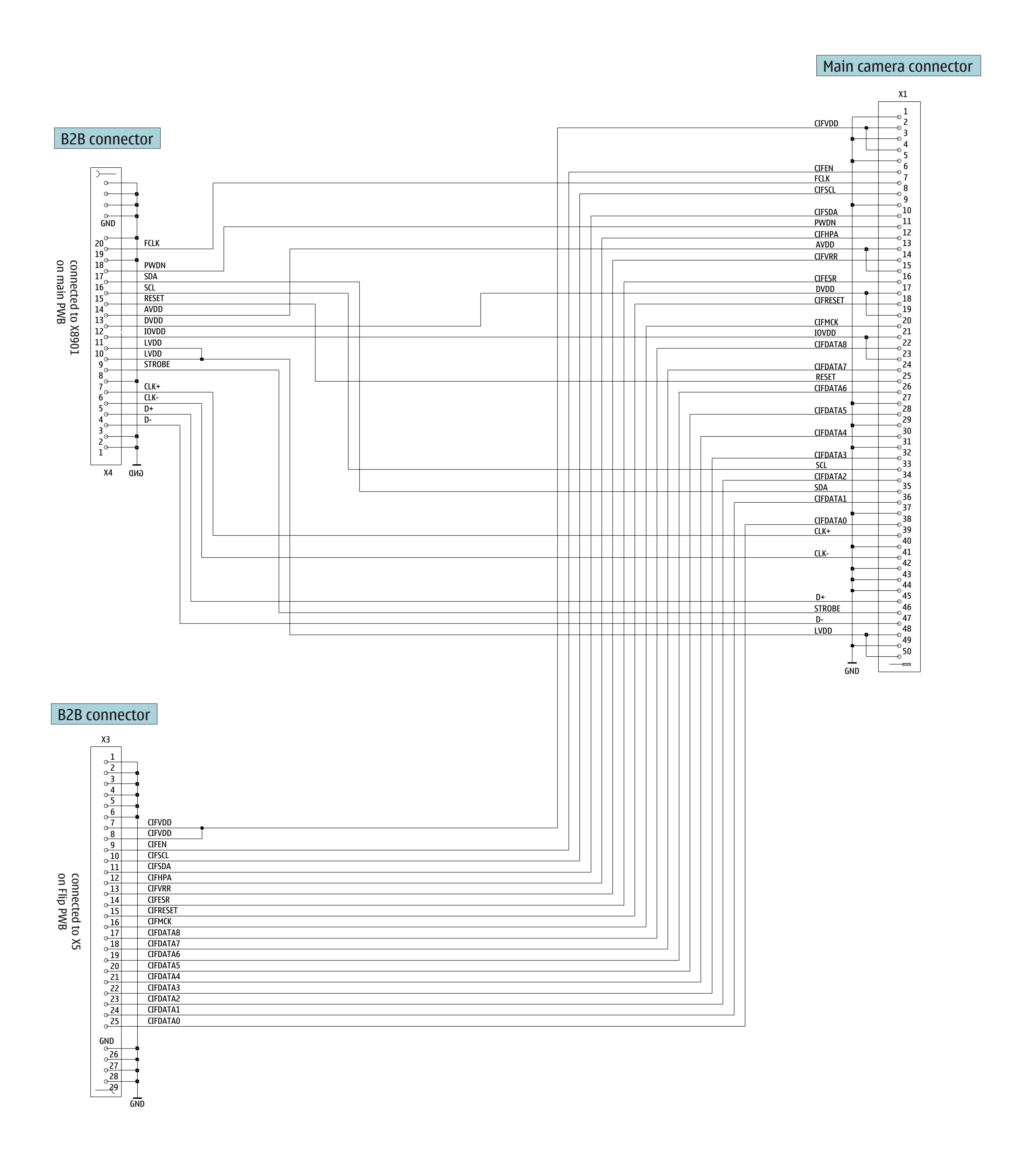
OMAP (1/2)
D4800 (1/2)
OMAP2420POP_ESHS2.1.1
D1001
K5W1G13ACM-DJ60
D4801
74LVC2G34YZTR
Vilma, RAP3GS, Menelaus
OMAP (2/2), Menelaus
Betty
OMAP temperature sensor
N4850
TMP105YZC_REV.B
Menelaus
Vilma
UI connector
connected to X1 on UI PWB
RAP3GS
BTFM, WLAN, Video amplifier
1.8V if indicator LED is active
LED driver
page 4
Flashlight driver
D8740
AN30251A-VB
D8720
X8901
STROBE
12.5V
3.7V
2.78V
1.8V
1.3V
2.8V
Flip connector
connected to X6 on Flip PWB
DISPLAY_APE(23:0)
SPI1_APE(6:0)
Z8801
Z8802
Z8900
Z8901
EMIF10-COM01F2

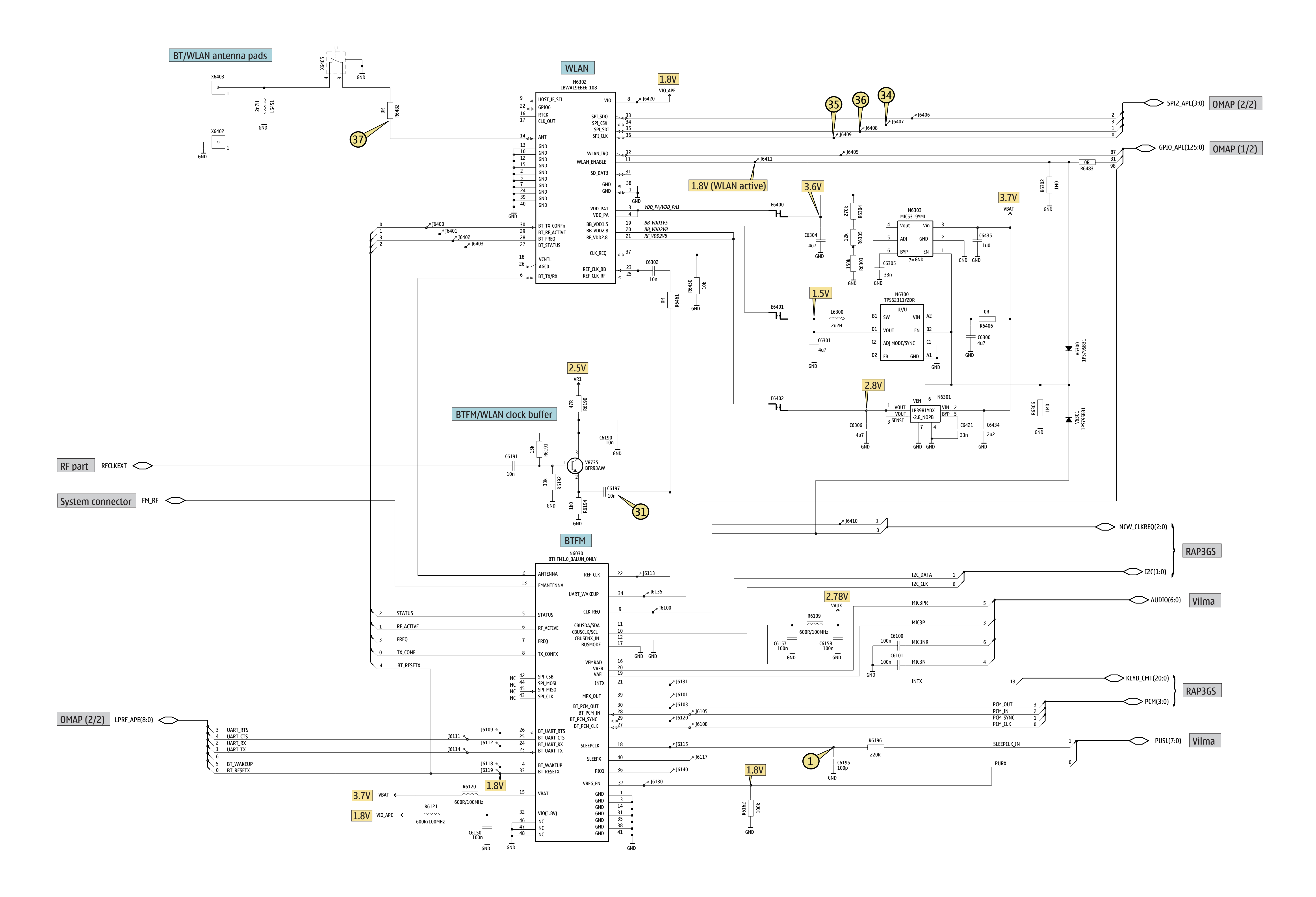

OMAP (2/2)
D4800 (2/2)
OMAP2420POP_ESHS2.1.1
Video amplifier
BTFM
Menelaus
RAP3GS
WLAN
Menelaus
OMAP (1/2)
Vilma
Camera/Capture Key/
Flip PWB connector
D8720
LED driver
1RZ_040
Capture Key PWB
this part of X8901 is connected to X4 on Camera PWB
this part of X8901 is connected to X5 on Flip PWB
3.7V
3V
1.8V
2.5V
N8702
N8701
N8703
Z8902
EMIF10-COM01F2


Flash LED
B2B connector
connected to X8520 on main PWB
Indicator LED
Power key
Stereo microphone
Keyboard illumination
Open/close sensor
Keyboard
Side navigation key
Five way navigation keys

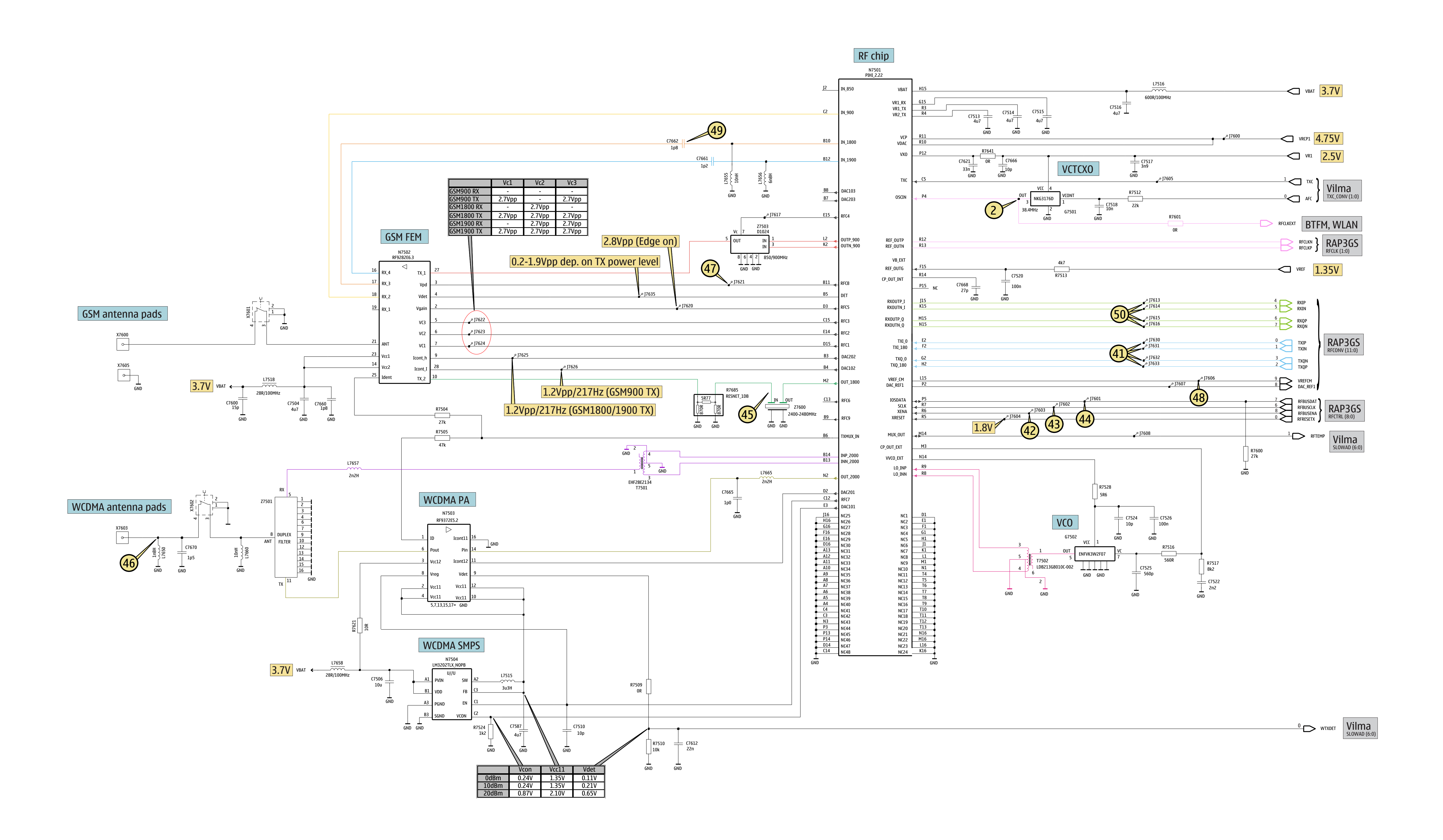


B2B connector
Sub display connector
Main display connector
Sub camera connector
IHF speaker
Earpiece
B2B connector
IrDA
Ambient light sensor
connected to X8900 on main PWB
connected to X8901 on main PWB
connected to X3 on camera PWB


Main camera connector
X1
B2B connector
X4
connected to X8901 on main PWB
B2B connector
X3
connected to X5 on Flip PWB
GND

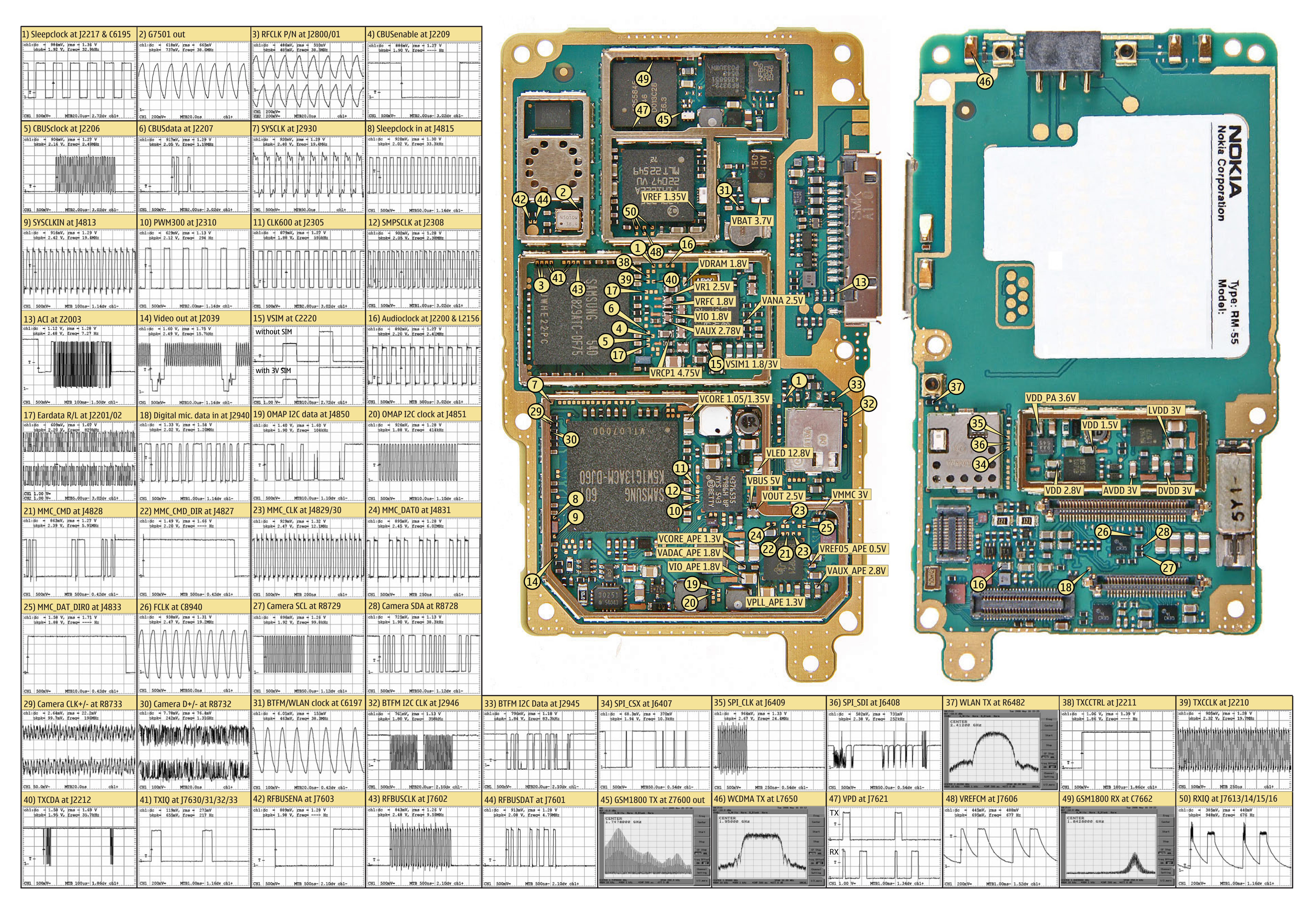


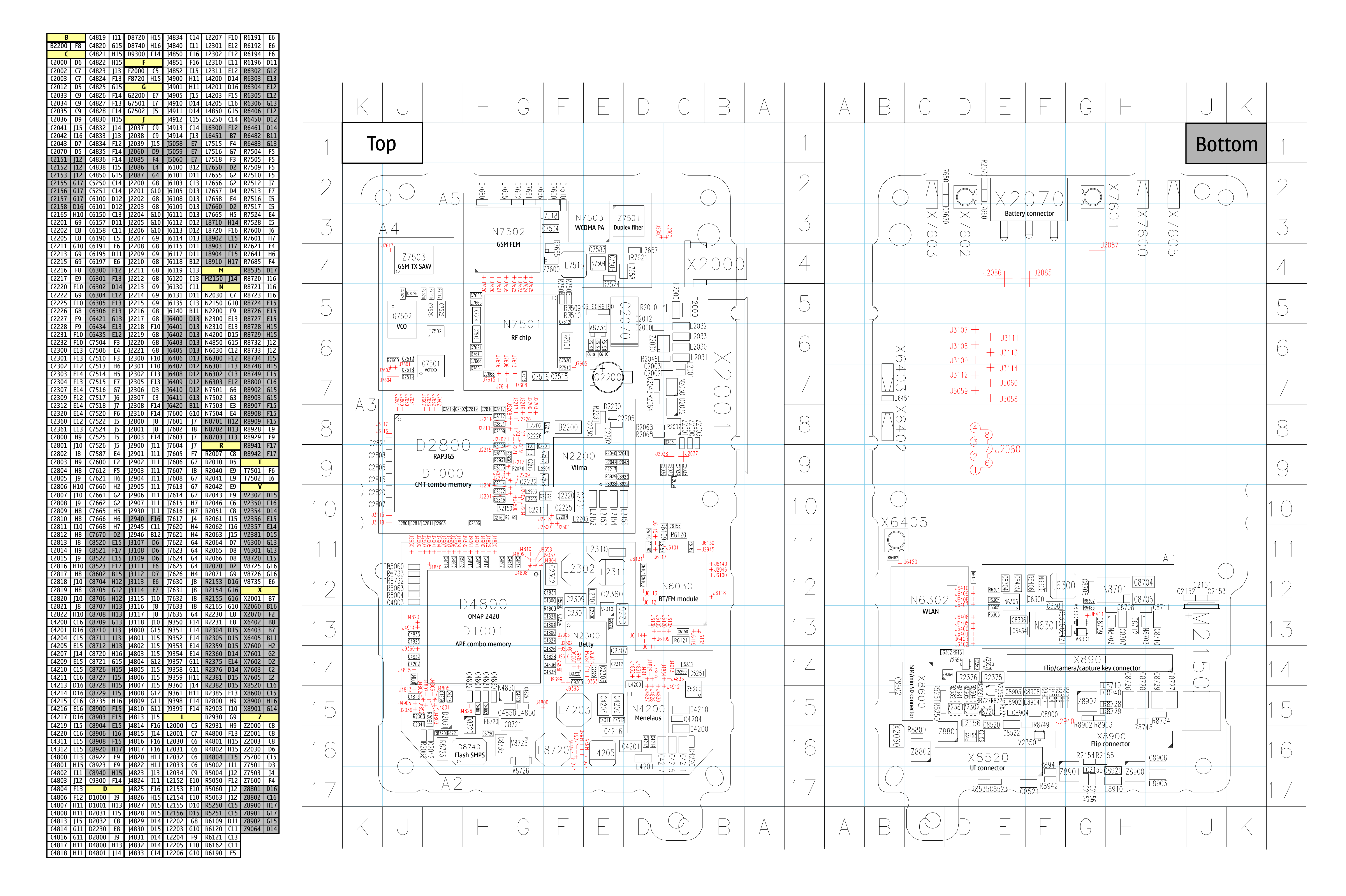
BT/WLAN antenna pads
WLAN
1.8V
OMAP (2/2)
OMAP (1/2)
1.8V (WLAN active)
3.6V
3.7V
1.5V
2.5V
2.8V
BTFM/WLAN clock buffer
RF part
System connector
BTFM
RAP3GS
Vilma
2.78V
OMAP (2/2)
3.7V
1.8V
1.8V
1.8V



	Vc1	Vc2	Vc3
GSM900 RX	-	-	-
GSM900 TX	2.7Vpp	-	2.7Vpp
GSM1800 RX	-	2.7Vpp	-
GSM1800 TX	2.7Vpp	2.7Vpp	2.7Vpp
GSM1900 RX	-	2.7Vpp	2.7Vpp
GSM1900 TX	2.7Vpp	2.7Vpp	2.7Vpp

	Vcon	Vcc11	Vdet
0dBm	0.24V	1.35V	0.11V
10dBm	0.24V	1.35V	0.21V
20dBm	0.87V	2.10V	0.65V


1) Sleepclock at J2217 & C6195
2) G7501 out
3) RFCLK P/N at J2800/01
4) CBUSenable at J2209
5) CBUSclock at J2206
6) CBUSdata at J2207
7) SYSCLK at J2930
8) Sleepclock in at J4815
9) SYSCLKIN at J4813
10) PWM300 at J2310
11) CLK600 at J2305
12) SMPSCLK at J2308
13) ACI at Z2003
14) Video out at J2039
15) VSIM at C2220
without SIM
with 3V SIM
16) Audioclock at J2200 & L2156
17) Eardata R/L at J2201/02
18) Digital mic. data in at J2940
19) OMAP I2C data at J4850
20) OMAP I2C clock at J4851
21) MMC_CMD at J4828
22) MMC_CMD_DIR at J4827
23) MMC_CLK at J4829/30
24) MMC_DAT0 at J4831
25) MMC_DAT_DIR0 at J4833
26) FCLK at C8940
27) Camera SCL at R8729
28) Camera SDA at R8728
29) Camera CLK+/- at R8733
30) Camera D+/- at R8732
31) BTFM/WLAN clock at C6197
32) BTFM I2C CLK at J2946
33) BTFM I2C Data at J2945
34) SPI_CSX at J6407
35) SPI_CLK at J6409
36) SPI_SDI at J6408
37) WLAN TX at R6482
38) TXCCTRL at J2211
39) TXCCLK at J2210
40) TXCDA at J2212
41) TXIQ at J7630/31/32/33
42) RFBUSENA at J7603
43) RFBUSCLK at J7602
44) RFBUSDAT at J7601
45) GSM1800 TX at Z7600 out
46) WCDMA TX at L7650
47) VPD at J7621
TX
RX
48) VREFCM at J7606
49) GSM1800 RX at C7662
50) RXIQ at J7613/14/15/16
VREF 1.35V
VBAT 3.7V
VDRAM 1.8V
VR1 2.5V
VRFC 1.8V
VANA 2.5V
VIO 1.8V
VAUX 2.78V
VSIM1 1.8/3V
VRCP1 4.75V
VCORE 1.05/1.35V
VLED 12.8V
VBUS 5V
VOUT 2.5V
VMMC 3V
VCORE_APE 1.3V
VADAC_APE 1.8V
VIO_APE 1.8V
VREF05_APE 0.5V
VAUX_APE 2.8V
VPLL_APE 1.3V
VDD_PA 3.6V
LVDD 3V
VDD 1.5V
VDD 2.8V
AVDD 3V
DVDD 3V
NOKIA
Nokia Corporation
Type: RM-55
Model:
SAMSUNG



B		C4819	I11	D8720	H15	J4834	C14	L2207	F10	R6191	E6
B2200	F8	C4820	G15	D8740	H16	J4840	I11	L2301	E12	R6192	E6
C		C4821	H15	D9300	F14	J4850	F16	L2302	F12	R6194	E6
C2000	D6	C4822	H15	F		J4851	F16	L2310	E11	R6196	D11
C2002	C7	C4823	J13	F2000	C5	J4852	I15	L2311	E12	R6302	G12
C2003	C7	C4824	F13	F8720	H15	J4900	H11	L4200	D14	R6303	E13
C2012	D5	C4825	G15	G		J4901	H11	L4201	D16	R6304	E12
C2033	C9	C4826	F14	G2200	E7	J4905	J15	L4203	F15	R6305	E12
C2034	C9	C4827	F13	G7501	I7	J4910	D14	L4205	E16	R6306	G13
C2035	C9	C4828	F14	G7502	J5	J4911	D14	L4850	G15	R6406	F12
C2036	D9	C4830	H15	J		J4912	C15	L5250	C14	R6450	D12
C2041	J15	C4832	J14	J2037	C9	J4913	C14	L6300	F12	R6461	D14
C2042	I16	C4833	J13	J2038	C9	J4914	J13	L6451	B7	R6482	B11
C2043	D7	C4834	F12	J2039	J15	J5058	E7	L7515	F4	R6483	G13
C2070	D5	C4835	F14	J2060	D9	J5059	E7	L7516	G7	R7504	F5
C2151	J12	C4836	F14	J2085	F4	J5060	E7	L7518	F3	R7505	F5
C2152	J12	C4838	I15	J2086	E4	J6100	B12	L7650	D2	R7509	F5
C2153	J12	C4850	G15	J2087	G4	J6101	D11	L7655	G2	R7510	F5
C2155	G17	C5250	C14	J2200	G8	J6103	C13	L7656	G2	R7512	J7
C2156	G17	C5251	C14	J2201	G10	J6105	D13	L7657	D4	R7513	F7
C2157	G17	C6100	D12	J2202	G8	J6108	D13	L7658	E4	R7516	I5
C2158	D16	C6101	D12	J2203	G8	J6109	D13	L7660	D2	R7517	I5
C2165	H10	C6150	C13	J2204	G10	J6111	D13	L7665	H5	R7524	E4
C2201	G9	C6157	D11	J2205	G10	J6112	D12	L8710	H14	R7528	I5
C2202	E8	C6158	C11	J2206	G10	J6113	D12	L8720	F16	R7600	J6
C2205	E8	C6190	E5	J2207	G9	J6114	D13	L8902	E15	R7601	H7
C2211	G10	C6191	E6	J2208	G8	J6115	D11	L8903	I17	R7621	E4
C2213	G9	C6195	D11	J2209	G9	J6117	D11	L8904	F15	R7641	H6
C2215	G9	C6197	E6	J2210	G8	J6118	B12	L8910	H17	R7685	F4
C2216	F8	C6300	F12	J2211	G8	J6119	C13	M		R8535	D17
C2217	E9	C6301	F13	J2212	G8	J6120	C13	M2150	J14	R8720	I16
C2220	F10	C6302	D14	J2213	G9	J6130	C11	N		R8721	I16
C2222	G9	C6304	E12	J2214	G9	J6131	D11	N2030	C7	R8723	I16
C2225	F10	C6305	E13	J2215	G9	J6135	C13	N2150	G10	R8724	E15
C2226	G8	C6306	E13	J2216	G8	J6140	B11	N2200	F9	R8726	E15
C2227	F9	C6421	G13	J2217	G8	J6400	D13	N2300	E13	R8727	E15
C2228	F9	C6434	E13	J2218	F10	J6401	D13	N2310	E13	R8728	H15
C2231	F10	C6435	E12	J2219	G8	J6402	D13	N4200	D15	R8729	H15
C2232	F10	C7504	F3	J2220	G8	J6403	D13	N4850	G15	R8732	J12
C2300	E13	C7506	E4	J2221	G8	J6405	D13	N6030	C12	R8733	J12
C2301	F13	C7510	F3	J2300	F10	J6406	D13	N6300	F12	R8734	I15
C2302	F12	C7513	H6	J2301	F10	J6407	D12	N6301	F13	R8748	H15
C2303	E14	C7514	H5	J2302	F13	J6408	D12	N6302	C13	R8749	F15
C2304	F13	C7515	F7	J2305	F13	J6409	D12	N6303	E12	R8800	C16
C2307	E14	C7516	G7	J2306	D3	J6410	D12	N7501	G6	R8902	G15
C2309	F12	C7517	J6	J2307	C3	J6411	G13	N7502	G3	R8903	G15
C2312	E14	C7518	J7	J2308	F14	J6420	B11	N7503	E3	R8907	F15
C2320	E14	C7520	F6	J2310	F14	J7600	G10	N7504	E4	R8908	F15
C2360	E12	C7522	I5	J2800	J8	J7601	J7	N8701	H12	R8909	F15
C2361	E13	C7524	J5	J2801	J8	J7602	I8	N8702	H13	R8928	E9
C2800	H9	C7525	I5	J2803	E14	J7603	J7	N8703	I13	R8929	E9
C2801	J10	C7526	J5	J2900	J11	J7604	J7	R		R8941	F17
C2802	I8	C7587	E4	J2901	I11	J7605	F7	R2007	C8	R8942	F17
C2803	H9	C7600	F2	J2902	I11	J7606	G7	R2010	D5	T	
C2804	H8	C7612	F5	J2903	I11	J7607	I8	R2040	E9	T7501	F6
C2805	J9	C7621	H6	J2904	I11	J7608	G7	R2041	E9	T7502	I6
C2806	H10	C7660	H2	J2905	I11	J7613	G7	R2042	E9	V	
C2807	J10	C7661	G2	J2906	I11	J7614	G7	R2043	E9	V2302	D15
C2808	J9	C7662	G2	J2907	I11	J7615	H7	R2046	C6	V2350	F16
C2809	H8	C7665	H5	J2930	J11	J7616	H7	R2051	C8	V2354	D14
C2810	H8	C7666	H6	J2940	F16	J7617	J4	R2061	I15	V2356	E15
C2811	I10	C7668	H7	J2945	C11	J7620	H4	R2062	I16	V2357	E14
C2812	H8	C7670	D2	J2946	B12	J7621	H4	R2063	J15	V2381	D15
C2813	I8	C8520	E15	J3107	D6	J7622	G4	R2064	D7	V6300	G13
C2814	H9	C8521	F17	J3108	D6	J7623	G4	R2065	D8	V6301	G13
C2815	J9	C8522	E15	J3109	D6	J7624	G4	R2066	D8	V8720	E15
C2816	H10	C8523	E17	J3111	E6	J7625	G4	R2070	D2	V8725	G16
C2817	H8	C8602	B15	J3112	D7	J7626	H4	R2071	G9	V8726	G16
C2818	J10	C8704	H12	J3113	E6	J7630	J8	R2153	D16	V8735	E6
C2819	H8	C8705	G12	J3114	E7	J7631	J8	R2154	G16	X	
C2820	J10	C8706	H12	J3115	J10	J7632	I8	R2155	G16	X2001	B7
C2821	J8	C8707	H13	J3116	J8	J7633	I8	R2165	G10	X2060	B16
C2822	H10	C8708	H13	J3117	J8	J7635	G4	R2230	E8	X2070	F2
C4200	C16	C8709	G13	J3118	J10	J9350	F14	R2231	E8	X6402	B8
C4201	D16	C8710	I13	J4800	G15	J9351	F14	R2304	D15	X6403	B7
C4204	C15	C8711	I13	J4801	I15	J9352	F14	R2305	D15	X6405	B11
C4205	E15	C8712	H13	J4802	I15	J9353	E14	R2359	D15	X7600	H2
C4207	J14	C8720	H16	J4803	I15	J9354	E14	R2360	D14	X7601	G2
C4209	E15	C8721	G15	J4804	G12	J9357	G11	R2375	E14	X7602	D2
C4210	C15	C8726	H15	J4805	I15	J9358	G11	R2376	D14	X7603	C2
C4211	C16	C8727	I15	J4806	I15	J9359	H11	R2381	D15	X7605	I2
C4213	D16	C8728	H15	J4807	I15	J9360	J14	R2382	D15	X8520	E16
C4214	D16	C8729	I15	J4808	G12	J9361	H11	R2385	E13	X8600	C15
C4215	C16	C8735	H16	J4809	G11	J9398	F14	R2800	H9	X8900	H16
C4216	E16	C8900	F15	J4810	G11	J9399	F14	R2903	I10	X8901	G14
C4217	D16	C8903	E15	J4813	J15	L		R2930	G9	Z	
C4219	I15	C8904	E15	J4814	F16	L2000	C5	R2931	H9	Z2000	C8
C4220	C16	C8906	I16	J4815	J14	L2001	C7	R4800	F13	Z2001	C8
C4311	E15	C8908	F15	J4816	F16	L2030	C6	R4801	H15	Z2003	C8
C4312	E15	C8920	H17	J4817	F16	L2031	C6	R4802	H15	Z2030	D6
C4800	F13	C8922	E9	J4820	H11	L2032	C6	R4804	F15	Z5200	C15
C4801	H15	C8923	E9	J4822	H11	L2033	C6	R5002	I11	Z7501	D3
C4802	I11	C8940	H15	J4823	J13	L2034	C9	R5004	J12	Z7503	J4
C4803	J12	C9300	F14	J4824	I11	L2152	E10	R5050	F12	Z7600	F4
C4804	F13	D		J4825	F16	L2153	E10	R5060	J12	Z8801	D16
C4806	F12	D1000	I9	J4826	H15	L2154	E10	R5063	J12	Z8802	C16
C4807	H11	D1001	H13	J4827	D15	L2155	D10	R5250	C15	Z8900	H17
C4808	H11	D2031	I15	J4828	D15	L2156	D15	R5251	C15	Z8901	G17
C4813	J15	D2032	C8	J4829	D14	L2202	G8	R6109	D11	Z8902	G15
C4814	G11	D2230	E8	J4830	D15	L2203	G10	R6120	C11	Z9064	D14
C4816	G11	D2800	I9	J4831	D14	L2204	F9	R6121	C13		
C4817	H11	D4800	H13	J4832	D14	L2205	F10	R6162	C11		
C4818	H11	D4801	J14	J4833	C14	L2206	G10	R6190	E5		